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ABSTRACT

This document contains four papers from a symposium on work analysis and expertise. "Using Performance Analysis for Training in an Organization Implementing ISO-9000 Manufacturing Practices: A Case Study" (Dale E. Kunneman, Catherine M. Sleezer) reports on a study in which a theory-based model, the Performance Analysis for Training Model, was used to analyze performance needs within an organization implementing ISO-9000 processes. A study of the efforts of a transit agency's training department to begin building credibility within the organization by proactively identifying training needs, implementing a training intervention, and measuring the intervention's impact on key organizational goals is discussed in "Building the Credibility of a Training Department: A Case Study" (Sharon J. Weisberger). "Identification, Training, and Certification of Expertise Required of Core Business Processes" (Richard A. Swanson) is a case study that goes beyond the traditional job and task analysis model and adopts a contemporary business performance improvement model. "Large-Scale Performance-Driven Training Needs Assessment: A Case Study" (Elwood F. Holton III, Reid A. Bates, Sharon S. Naquin) describes an unusual needs assessment project designed to identify the performance improvement training needs of Louisiana state government employees. (MN)

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11 **Work Analysis and Expertise**

**Chair: David Antonioni, University of Wisconsin-Madison**

Using Performance Analysis for Training in an Organization Implementing ISO-9000 Manufacturing Practices: A Case Study

*Dale E. Kunneman, Meridian Technology Center*

*Catherine M. Sleezer, Oklahoma State University*

Building the Credibility of a Training Department: A Case Study

*Sharon J. Weisberger, Nissan Motor Acceptance Corporation*

Identification, Training, and Certification of Expertise Required of Core Business Processes

*Richard A. Swanson, University of Minnesota*

Large-Scale Performance-Driven Training Needs Assessment: A Case Study

*Elwood F. Holton III, Louisiana State University*

*Reid A. Bates, Louisiana State University*

*Sharon S. Naquin, Louisiana State University*

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# Using Performance Analysis for Training in an Organization Implementing ISO-9000 Manufacturing Practices: A Case Study

*Dale E. Kunneman*
*Meridian Technology Center*

*Catherine M. Sleezer*
*Oklahoma State University*

*Efforts to improve individual and organizational performance begin with analysis of needs. In theory and practice this statement is true; however, the connection between theory and practice is not always clear. This case study examined the use of a theory-based model, the Performance Analysis for Training (PAT) Model, for analyzing performance needs within an organization that was implementing ISO-9000 processes.*

Analysis of performance needs is the usual starting point for HRD and training processes. However, the literature reports few systematic studies that describe actual assessment practices in the workplace (Lewis & Bjorkquist, 1992; Tannenbaum & Yukl, 1992). This case study extends previous research by examining the use of the theory-based Performance Analysis for Training (PAT) Model to analyze the needs of an organization implementing ISO-9000.

## Problem Statement and Theoretical Framework

The process of analyzing needs has been described in literature as needs assessment, needs analysis, front-end analysis, and performance analysis (Rossett, 1992). While the particular meanings of these terms have been debated (Moseley & Heaney 1994) each identifies a similar intent: to ascertain performance improvement opportunities or problems. Practitioners have available many models that include or detail processes for analyzing needs (e.g., Goldstein, 1986); Gupta, (1996); Sleezer, (1991); Swanson, 1994). The expectation is that the process of determining and addressing performance needs will lead to benefits such as increased productivity, profit, satisfaction, and innovation.

In contrast to the many models and theories, little is known about the actual approaches taken by expert HRD practitioners to solve performance-related problems (Lewis and Bjorkquist, 1992). Sleezer and Maile's (1997) cross-case study of needs assessment showed that HRD professionals used diverse practices and concluded by calling for additional research and model-building aimed at practical needs assessment tools. Hatcher and Ward (1997) stated that because of the rapidity of organizational change, performance improvement professionals need innovative ways to analyze issues affecting performance. Gill (1995) indicated that performance analysis must not lose sight of the firm's long range goal of survival and growth and must "link training events and outcomes clearly and explicitly to business needs and strategic goals" (p.30).

One business need faced in many organizations today involves implementing quality management systems for continuous improvement processes. The International Standards Organization (ISO) 9000 series provides a well-accepted base to build an improvement process and has already certified tens of thousands of organizational operations to standards (Harrington, 1995). The standards require procedures for identifying training needs and providing training to meet those needs. Also, assessment can be useful in defining, documenting, and communicating an organization's quality policy.

One theory base needs assessment model that has been tested in practice is the Performance Analysis for Training (PAT) model. Directed toward identifying the organization's performance needs that should be addressed with training, the model includes three components: (a) a

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conceptual framework with three elements that affect decisions about training needs, (b) a list of the phases and steps involved in the process of determining training needs, and (c) a set of worksheets that detail the phases, steps, and activities involved in determining training needs in an organization (Sleezer, 1991). The PAT model's premise is that the process and results of a performance analysis are influenced by the organization's characteristics, the decision maker's characteristics, and the analyst's characteristics. Training needs are perceived, negotiated, and prioritized through interaction of the decision maker, analyst, and organization characteristics. Studies testing the PAT model in practice have targeted a financial services firm (Sleezer, 1991), a vehicle manufacturer (Sleezer, 1996), a chemical manufacturer (1995), and a university school of veterinary medicine (Knorr, 1997). These studies have provided support for the PAT model's premise and identified adaptations to the model.

**Research Methodology**

This case study extends previous research by examining the PAT Model's implementation within a particular situation, an organization that was implementing ISO-9000 processes. With this research method, each case that documents the application of the PAT Model in a situation with distinct organization, decision maker, and analyst characteristics tests the model and its theoretical base.

The five components of case study research identified by Yin (1989) formed the framework for the study. They are: a) the study questions, b) the propositions, c) the units of analysis, d) the logic linking the data to the propositions, and e) the criteria for interpreting the findings (Yin, 1989). According to Eisenhardt (1989), Lee (1985), and Yin (1989), if cases are purposefully selected and multiple cases confirm predictions, then the propositions are supported. However, if the case contradicts the predictions in some way, then the initial predictions must be revisited and retested (Yin, 1989).

***Case Study Components.*** This section provides details on the five case study components.

The Study's Questions and Propositions

This study analyzed the relationship between the theory and practice of performance analysis by focusing on two questions and two propositions.

*Study Question #1 and Proposition.* The first study question asked: Will using the PAT Model in an organization that is implementing ISO-9000 processes produce the following predicted results: a) involve the organization decision maker(s) in the training process, b) provide the organization decision maker(s) with accurate and sufficient information for making determinations about the contributions that training should make to the performance needs of the organization, and c) provide the organization decision maker(s) with information useful for designing, developing, implementing, and evaluating training?

The proposition analyzed while answering this question focused on the first component of the PAT Model: The process of framing the performance needs and the resulting outcomes will be influenced by three elements—organization characteristics, decision maker characteristics, and analyst characteristics—and their interactions.

*Study Question #2 and Proposition.* The second study question asked: What is the correspondence between the actual process used for the performance analysis and the process outlined in the PAT Model?

The proposition analyzed during the process of answering the second study question was that the three levels of analysis referenced in the PAT Model—organization analysis, work behavior analysis, and individual capabilities analysis—would be appropriate for analyzing performance needs in this situation. While the three-level approach has been described frequently in the literature (e.g., Goldstein, 1986; Harris & DeSimone, 1994), previous research revealed that the 3 levels of the PAT model were not always used (Sleezer, 1995).

**Unit of Analysis**

For this study, the unit of analysis was the entire performance analysis conducted for a manufacturing organization. The organization was selected as a research site because decision makers from the organization had approached the analyst to assess the training needs associated with ISO-9000 certification. The decision makers had previously worked with the analyst and the Meridian Technology Center, a vocational education institution, on another program and had established a working relationship.

Data collection consisted of specific actions, decisions, and results of using the PAT Model. In addition to using the worksheets, the analyst kept detailed field notes and presented periodic reports to the organization's decision makers. To enhance the validity and reliability of data collection, respondent and document verification and data source triangulation were used. With respondent verification, individuals who had been interviewed or observed reviewed a summary of the event and indicated whether they concurred with the description. Data source triangulation required collecting information from people and sources at different points in time.

*Logic Linking Data to the Proposition.* To connect the data to the propositions, the study relied on a conceptual framework: the PAT Model. For example, the PAT worksheets were used when making decisions about the information to be gathered, the actions to be taken at each step in the process, the sources of data, and the events to record.

The data was reduced and displayed for analysis as described by Miles and Huberman, (1984). In this study, determining what to record on the PAT worksheets involved data reduction. Also, the PAT worksheets provided a well-organized and compact display of the data and allowed the analyst to view the situation clearly. The PAT worksheets, the field notes, and the reports to the organization were all used in considering the propositions and answering the research questions.

*Criteria for Interpreting the Findings.* The means for judging whether the research questions were answered was determined prior to initiating the project. The analyst and the decision makers agreed to work together following the performance analysis to evaluate the project's process and results related to the research questions and propositions. For this study, the decision makers reviewed the case study process and the results to assess the analyst's perceptions of the data and the evidence gathered.

**Description of the Organization**

The research site was a division of a worldwide manufacturer of business forms and business systems design. The division, constructed in 1966, is the largest single facility in the company's North American operations. Total employment at this site is 154 with an annual payroll of approximately $7,073,000. The division produces adhesive for the label products, dye products, business forms, and label stocks for use as repositionable stick notes, postal labels, and other related label products. In 1994, this site achieved International Standards Organization (ISO) 9000 registration, which is a worldwide standard for quality systems and business processes. Achieving and maintaining this registration required Quality Procedures that were well documented and adhered to by every employee. Ongoing audits by the Standards Organization ensured that the quality operations procedures were current and used to continuously improve production.

The project decision makers were the Plant Manager and the Chemical Department Manager. The Chemical Department Manager, the catalyst for implementing the performance analysis, had support for this project from the Plant Manager, the Environmental Manager, the Safety Administrator, and Department Managers.

The project analyst was the first author of this paper. The analyst's experience in needs assessment included graduate-level study and prior leadership in needs assessment efforts in many organizations in the service, manufacturing, and government sectors.

The context of this study is as follows: As part of IS0-9000 continuous improvement, the Chemical Department Manager decided to establish a formal orientation program for current and

new operators. He expected the program to include introductions to the operating system and the production process. As a first step in establishing the orientation program, the Manager decided that it was necessary to train current operators and redesign the standard operating procedures (SOP). The Manager contacted the analyst and asked him to conduct a performance analysis to determine the critical needs for the current and new operators. After the initial interview, the analyst selected the PAT Model to guide the effort. During a subsequent meeting, the Manager and the analyst agreed to begin the project by implementing an organizational analysis and a work behavior analysis, the first two phases of the PAT Model. The Manager and the analyst decided to postpone implementing the individual capabilities analysis, the third phase of the model, until the results of the first two phases were received. Conducting the performance analysis using the PAT Model was expected to provide for the orientation program the following: 1) identification of ideal work behaviors, 2) documentation of actual work behaviors, and 3) identification of barriers to performance.

**Implementing the PAT Model in the Chemical Manufacturing Department**

The first phase, determining where the training emphasis should be placed, was influenced by the addition of new production operators to the organization. The analyst and the manager agreed that the training should be targeted at the production area because it had the most potential for individual and organizational performance. They also agreed that the training should support the ISO-9000 requirements and emphasize specific problems or concerns at the individual, process, and organizational levels.

Expected challenges to gathering data included time, employee access, and plant manager access. Prior to initiating the performance analysis, the analyst anticipated that time for collecting data would be limited because the research site was a functioning plant with production requirements to meet. To address this challenge, the analyst planned to interview managers, supervisors, and production employees during actual production periods where the observations and interviews were periodically interrupted by high-demand production situations.

Employee access was also anticipated as a possible concern. Production employees might feel anxious that an outside analyst was gathering information for a performance analysis and as a result provide limited access to information. To address the concern, the plant manager positioned the performance analysis as an opportunity to learn with honest and full information disclosure making the project more beneficial. He also announced that information would be grouped before being reported. This positioning made it possible to obtain detailed descriptions of employee perceptions and behaviors.

Another anticipated concern was limited access to the plant manager because of his other commitments. The strategy for addressing this issue was short, structured meetings, scheduled at the plant manager's convenience.

Implementing the first phase of the PAT Model included gathering and analyzing job descriptions, performance worksheets, projected performance goals, organizational charts, past employee orientation materials, standard operating procedures, and safety and operator training materials. Data were gathered by reviewing written records, interviewing the plant manger, area supervisors and product group managers, and by observing managers and production staff members on the job. The compiled information provided the basis for the next phase of the needs analysis, the work behavior analysis.

The PAT Model demanded the use of multiple sources of data. The information gathered from one source or individual at a given point in time was compared with information that had been gathered from other sources or individuals at points in time. Throughout the entire performance analysis, the analyst compared the newly-gathered data with the needs assessment notes and other sources of information. Questionable data was pursued to determine its accuracy and relevance.

Compilation and synthesis of the information provided the analyst with background information about the organization's situation. The compiled information also provided perceptions and other data about the production area's performance issues and opportunities.

Reviewing the synthesized data revealed that the perceptions of the performance improvement emphasis varied among the area managers, area supervisors, plant manager, and production operators. Each stakeholder participating in the needs assessment faced different pressures for performance and, consequently, had different desired outcomes. The plant manager had focused on meeting the standards required for continued ISO-9000 certification. He viewed certification as important for meeting customers' requirements and for addressing safety concerns. Some customers purchase only from certified vendors. Also, the ISO-9000 certification requirement to document and standardize processes would address the safety needs relative to production operators working with toxic and potentially hazardous chemicals. In contrast, the production operators and area supervisors were more concerned with production demands and operators' capabilities.

After reviewing the data, the area managers, area supervisors, plant manager, and production operators agreed that several major opportunities for performance improvement existed that would address all the stakeholders' emphases. Opportunities such as documenting work processes and training production employees would improve operators' capabilities, increase production relative to demands, and also meet and exceed ISO-9000 requirements.

The analyst and Plant Manager agreed on a process that involved sharing the synthesized data with the stakeholders, verifying contrasting perceptions, and reaching consensus on concerns and potential opportunities for performance improvement. Sharing information resulted in full consensus on the means to accomplish the remaining analysis work and agreement that multiple final outcomes could ensue from the next phase of the analysis.

Phase 2, the work behavior analysis, focused on the production operator's job. This phase included subject matter analysis and job profile analysis using the Valpar-2000 job profiling system. Subject matter analysis involves analyzing the theory, the principles, and the practices necessary to perform the work (Swanson, 1994). The Valpar Job Profile is a two-step process that requires that first, two certified and independent profilers document and analyze all observable work behaviors involved with the specific job. The next step entails verifying the tasks, assigning levels to fourteen separate aptitude areas and assessing new and current operators against the standards established by the profilers. Assigning aptitude levels requires documentation using the *Dictionary of Occupational Trade* (1991) job identification numbers and recording aptitude levels from the *Handbook for Analyzing Jobs* (1991).

In reviewing the Phase 2 data with the area managers, area supervisors, and plant manager, the analyst identified specific process, performance skill and knowledge needs for the production operators. The other stakeholders in the process concurred. The Plant Manager and area managers had resources for addressing this training need. The duty of trainer/facilitator was recently added to the responsibilities of the area supervisors and provided time and human resources for delivering the needed training.

The area managers, area supervisors, plant manager, and analyst also agreed that all production operators needed to be trained or retrained on the orientation program and that the third phase of the PAT Model, analysis of individual capabilities, was unnecessary. The Plant Manager and analyst agreed to place full emphasis on the production operators training process.

**Results**

The results were obtained by comparing the actual performance analysis process with the study questions and propositions. Also reflecting on the process resulted in additional learning.

***Study Question #1 and Proposition.*** The first study question asked: Will using the PAT Model in a specific organization that is implementing ISO-9000 processes produce the following predicted results: a) involve the organization decision maker(s) in the training process, b) provide the organization decision maker(s) with accurate and sufficient information for making

determinations about the contributions that training should make to the performance needs of the organization, and c) provide the organization decision maker(s) with information useful for designing, developing, implementing, and evaluating training? After the performance analysis and the initial training were completed, the analyst and the decision makers evaluated the process and results of the needs analysis. The decision makers and the analyst agreed that the improvement effort provided exactly what was intended, a well-documented analysis of performance needs for enhancing production capabilities.

After reviewing all the documentation from the performance analysis, the analyst and the decision makers agreed that implementing the PAT model produced the predicted results. The decision makers stated that they had been involved in planning the analysis, contributed to its success, received on-going process reports, and discovered "many useful skills in the organization they were not aware of". They also commented on the usefulness of the analyst as a future resource for performance analysis and training, allowing them to deal with management issues and use their time wisely. In this situation, the decision makers felt that they had received accurate information from the literature and the work setting and that they had gained information useful for designing, developing, implementing, and evaluating training. The decision makers did come to the conclusion that the performance issue was more complex than they had initially thought and that providing training without considering other work place constraints would likely result in little use of the skills or knowledge.

Addressing the first proposition, the analyst and the decision makers agreed that the resulting outcomes were influenced by the three identified elements - organization characteristics, decision maker characteristics, and analyst characteristics—and their interactions. For example, a clear understanding of the organization's system, culture, and internal politics was key to understanding the performance problems and opportunities. Additionally, the rhetoric used by the organization and individual stakeholders had created an apparent consensus of perceptions while it masked real reasons for desired performance improvement. The analyst's focus on performance improvement, his ability to document differing perceptions, his experience with the Valpar-2000 job profiling system, and his profiling certification, had influence on both the process and the results. The decision makers' support of the performance analysis and their power to implement both training and non-training solutions impacted the process and outcomes of the project. One characteristic of the PAT Model was its "transparency". In this situation, the decision makers and employees were unaware that the analyst was using a specific model to guide the needs assessment.

***Study Question #2 and Proposition.*** The second study question asked: What is the relationship between the actual process used for the performance analysis and the process outlined in the PAT Model? In practice, the PAT Model and the actual process used for the performance analysis were similar. Further, the PAT Model's use was virtually transparent to the organization and the decision makers. The decision makers and employees participated in the performance analysis, but were not required to be familiar with the PAT model. The learning for the organization occurred in the form of the identification of needs. However, the analyst noted four adaptations to the PAT model.

The first adaptation involved beginning the PAT Model Phase 2, work behavior analysis, while Phase 1, organization analysis, was in process. The decision makers had sensed prior to beginning the project that the work of production operators should be analyzed. However, they were unsure of the extent of the performance problem in the production area, the causes of the performance problem or even for sure that there were specific problems in this area. Therefore, the PAT Model was implemented as follows: Phase 1, Steps 1 through 6; Phase 2, Steps 1through 3; Phase 1, Step 7; Phase 2, Step 4. Further, the steps were not discrete: Some steps began before others were completed. The analyst found that completing Phase 1 and 2 in concert expedited the process. The information provided by Phase 1 of the PAT model contributed to the project. For example, knowing that stakeholders had varied perceptions for the performance improvement effort resulted in implementing a process for reaching consensus.

The second adaptation dealt with the use of PAT Model, Phase 2, work behavior analysis, as a decision making devise. The PAT Model outlines the intent of Phase 1 as "determine where in

the organization or work group the training emphasis should be placed" (Sleezer, 1991). However, in this situation, the work behavior analysis was used in determining the emphasis area and the analyst and decision makers determined the targeted area for training at the completion of Phase 2, Step 3. In fact, the data gathered and synthesized during Phase 2 relative to specific job behaviors resulted in transforming the decision makers sensed need into specific, delineated and documented needs with implications for training, job redesign, and process improvement.

The third adaptation focused on the PAT worksheets for Phase 1 and 2 analysis. The analyst found that while the worksheets provided a guide and a framework for organizing the information, they did not lend themselves to the situation. Alterations and adaptations were required to contextualize the performance analysis tools. For example, the question in Phase 1, Step 2 "Do the decision makers and analyst agree about the purpose and parameters of the analysis . . . . Do not proceed with the assessment until there is agreement." In this situation, the agreed upon parameters changed with the input of new data. The question was finally answered after Phase 2, Step 3.

The fourth adaptation to the PAT Model involved using the Valpar 2000 profiling system to analyze work behavior. In the PAT Model, Phase 2, Steps 2 and 3 call for using analysis methods identified by Swanson and Gradous (1986). However, many other analysis methods are available (Jonassen, Hannum, & Tessmer, 1989). In this situation, the Job Description and Task Inventory tools described by Swanson and Gradous were integrated the Valpar 2000 method.

The Proposition analyzed during the process of answering the second study question emphasized the three levels of analysis present in the PAT Model—organizational, work behavior, and individual—referenced in the PAT Model: Will all three levels of analysis be appropriate for analyzing performance needs? In this situation, only the first two phases of the PAT Model were needed; prior to the third phase the decision was made to provide all production operators with training rather than to consider individual capabilities.

A thorough understanding of the performance situation did result from using the PAT Model. However, the four adaptations to the PAT Model suggest the importance of a contextualized model, customized to fit the situation and the analyst.

## Conclusions

This case provided a test of the PAT Model and an examination of the process used in conducting a performance analysis. In a manufacturing organization implementing ISO-9000 processes, an adapted PAT Model usefully guided the analysis of performance needs. Implementing the performance analysis clarified the ideal work behaviors and the barriers created by the system and the work processes. It also facilitated understanding of knowledge and competencies required to improve production operator performance. In this situation, the performance analysis for training led to an immediate training solution and a greater understanding of the complexities of the system and performance environment. This study also showed that the process and outcome of a performance analysis were influenced by the organization's characteristics, the decision maker's characteristics, and the analyst's characteristics. Using the PAT Model revealed inconsistencies in performance expectations, increased the focus of the resulting training, and helped decision makers to make informed training decisions.

The PAT model provided a road map for investigating performance needs to appropriately address with training. However, a limitation of case study research is that the results can not be readily or immediately generalized to similar organizations. Continued research is needed to enhance the practice of performance analysis. Additional studies are needed to test the propositions and the transferability of the PAT Model in other situations.

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# Building the Credibility of a Training Department: A Case Study

*Sharon J. Weisberger*
*Nissan Motor Acceptance Corporation*

*This study examines the efforts of a training department in a transit agency to begin building credibility within the organization by proactively identifying training needs, implementing a training intervention, and measuring the impact of that intervention on key organizational* goals.

Many training departments find themselves struggling to gain credibility in the eyes and minds of the line managers who they support. Often, line managers perceive that the training department decreases the productivity of their employees by keeping them in long, frequent and unnecessary classes that do little to improve employees' skills. Without strong working relationships with line managers and a focus on interventions that improve employee productivity and performance related to key organizational objectives, training departments fail to serve their customers adequately. As a result, training departments continue to lack support, respect and influence, and are unable to prove their value to their organizations.

A training department for the maintenance department of a transit authority in the southwestern United States found itself in this very predicament. The line managers often complained that training classes disrupted their operations and that the training department was insensitive to operational issues. As one way of changing this perception, the Vice President of Training suggested that the training department identify, implement, measure and report the effectiveness of training interventions that impacted key organizational concerns. The Assistant Vice President recommended focusing on ways to reduce labor and parts costs related to bus road call repairs, because these were issues of great concern to line managers.

## Problem Statement and Theoretical Framework

The purpose of this study was to determine whether conducting a training intervention that impacted important organizational goals, evaluating the effects of that intervention on the organization, and reporting those results to line managers would begin to enhance the credibility and influence of the training department within the organization.

A review of the literature was conducted to identify practical suggestions for tying training department goals to organizational goals, and effective ways for measuring and reporting the return on investment of training.

***Tying Training Department Goals to Organizational Goals*** The literature has much to say on this topic, but contains mostly anecdotal, rather than well-researched examples of companies that have been successful in doing so. Therefore, the literature mostly provides support that tying department goals to organizational goals is what all departments are supposed to do and that this is the most effective way to build credibility within organizations.

"If trainers want to have credibility within their organizations, they needs to be viewed as people who understand the real business issues facing their companies" (Linkemer, 1987, p.55). Further, the purpose of the training department is to improve the performance and productivity of employees so they achieve organizational objectives. This purpose cannot be achieved if the training department's objectives are not aligned with those of the organization objectives (Pepitone, 1995; Harp, 1995; Robinson, 1995). "One of the major challenges to all training and development functions in today's changing organizations (is) ensuring that the training function addresses the organization's critical needs" (Chaddock, 1995, p.24). Chaddock explains that the training department must understand the variables that are critical for success in their organizations and then realign the training function to support organizational goals. "For the training and development function . . . what matters is being aware of change and understanding

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its implications for the human-performance requirements of the organization" (Chaddock, 1995, p.24).

***Measuring and Reporting the Return on Investment of Training*** Increasingly, training and development departments are being asked to provide evidence of their impact on the organization (Phillips, 1991). One way to do this is through reporting and measuring the return on investment of training. Many have written about how to evaluate training. For this study, an effective model that could be easily implemented was sought. Kirkpatrick and Phillips provided two such models.

Kirkpatrick (1994) identifies four levels of evaluation. Level 1 measures the reaction of participants to a training program (Did they like it?). Level 2 measures learning, whether the program objectives were met. Level 3 measures whether participants have transferred new behaviors taught in training back on the job. Level 4 measures the results (such as return on investment) of the training program.

Phillips (1991) also provides recommendations for measuring results. His suggests trainers: determine baseline data, determine an evaluation method, determine an evaluation strategy, conduct the program, and calculate return on investment. Phillips notes that data for evaluation measurements can be collected from observations, questionnaires, work observations, performance records, and tests. He notes also that hard data (output, quality, cost and time) is easier to collect than soft data (work habits, new skills, work climate, attitudes, initiative).

Phillips (1991) recommends calculating the return on investment of a training program when the program benefits can be clearly documented and substantiated. If management believes in the method of calculating the benefits, then they will have confidence in the value for the return. A return should be compared with a predetermined standard to be meaningful. Management should make the ultimate decision about whether the return is acceptable.

One formula recommended by Phillips (1991) for calculating the return on investment of training is savings/investment. The investment may include analysis costs, development costs, delivery costs, and evaluation costs.

Communicating program results that are significant should have a positive effect on increasing the credibility of the training department. Communication of the return on investment results must be timely (as soon as known), targeted to a specific audience, unbiased and modest (Phillips, 1991). Phillips cautions trainers not to boast about a high return on investment result. He states that it is not unusual to generate a high return on investment for training programs. A person boasting about this high return will be open for possible criticism from managers, particularly those with finance and accounting backgrounds, unless there are indisputable facts on which the calculation is based. Boastful statements may also turn off the recipient. Phillips recommends using testimonials if they are from individuals the audience respects. He recommends tailoring the communication strategy of results to the audience's perception of the HRD department.

In summary, the literature provides support for the importance of tying training department goals and activities to the organization's goals. However, few rigorous examples or case studies are provided about how to do so. The literature also provides some helpful methods for evaluating training interventions and communicating those results effectively to line managers.

**Research Questions**

The question to be answered in this study was:
Will the reporting of the financial impact of a training intervention begin to enhance the credibility of the maintenance training department within the maintenance department?

## Methodology

This study is a case study of the attempts of one training department to begin to build its credibility within the organization by reporting the results of a training intervention on key organizational goals. The study had six phases. First, a key organizational goal was selected. Then, a needs assessment was conducted to determine why that goal was not being met. Third, it was determined which of these factors could be addressed by training. Fourth, a training intervention was identified and developed. Fifth, the training intervention was implemented. Sixth, the training intervention was to be evaluated. Lastly, the financial impact of the intervention was to be reported to line managers.

***Key Organizational Goal Selected*** The organizational goal selected was "to reduce parts and labor costs due to bus road call repairs." A road call is a report about a mechanical problem with a bus made by the bus driver while the bus is transporting passengers. Typical road calls are the air conditioning is not cooling, the fare box is not calculating fares, the brakes are squeaking, the bus will not start. Reducing road calls is important because the more road calls there are, the fewer buses the transit agency has on the streets to transport passengers. Reducing the cost of road call repairs indicates to the transit agency that the maintenance department is containing its repair expenses. The number of road calls is published monthly for all managers, yet the causes of road calls are neither analyzed nor reported.

***Needs Assessment***

*Trend Identification.* The first step in the assessment was an identification of the trends in the road calls for the four systems with the highest parts and labor costs. A system is a set of related parts that perform a specific function within a bus. The transit authority tracks road calls in fifteen different systems, including air conditioning, brakes, engine, transmission, doors, and heating. The four systems with the highest parts and labor costs were air conditioning, brakes, engine and transmission.

Database records about road calls, between April 1, 1996 and October 31, 1996, for the four systems, were summarized; trends in the data were then identified. An emphasis was placed on identifying repeat road calls in the same system in each bus, because these had the greatest potential for indicating training related issues. The period of April through October was chosen because it covered three seasons of the year and was long enough to study both general and seasonal trends.

There were 549 buses in the entire fleet of the transit agency. The fleet was composed of buses from three different manufacturers: Neoplan, Flxible™, and RTS. All of the Neoplans were purchased in 1986, the Flxibles were all purchased in 1981, and the RTS buses were purchased in 1991. Each of these three types of buses had systems (such as air conditioning) from different manufacturers, as well. There were 347 Neoplan, 74 Flxible, and 128 RTS buses in the fleet. The sample in this study was 226 buses, approximately 40% of each bus type. 137 were Neoplans, 37 were Flxibles, and 52 were RTS.

*Trend Analysis.* The trends in repeat road call repairs were analyzed to determine their significance, root causes, and implications for training. Quality control personnel who were knowledgeable about bus repairs and systems analyzed the trends. In addition, mechanics who performed the repairs and their managers were interviewed to determine how repairs were actually performed. Mechanics and managers were interviewed separately. Interviews were conducted individually and with groups of four or five people. Interviews lasted up to 30 minutes. The mechanics who performed repairs had all worked for the agency for at least five years, most for at least ten years. In addition, the mechanics had equal experience repairing all three types of buses.

***Which Causes May be Addressed by Training*** The interviews with quality control personnel, managers and mechanics indicated which causes of the trends could be addressed by training.

***Identify Training Intervention*** A 2-hour training intervention was identified based on the information gained from all interviews. Course objectives and materials were developed based on this information. A trainer was selected to provide the training to 150 mechanics.

***Implement Training Intervention*** The training intervention was not implemented in a timely manner, as will be discussed in the results section.

***Evaluate Training Intervention*** Mathematical calculations were developed to measure the financial impact of the proposed training interventions on the organization using Phillips suggested formula of savings/investment.

***Report the Financial Impact of the Intervention*** Because the implementation of the training intervention was not completed, the financial impact could not be reported. It was planned to report the results in a brief presentation at a meeting of the President of Maintenance, the Vice President of Maintenance Training, the Vice President of Bus Maintenance, and the Vice President of Train Maintenance. After this presentation, it was hoped that a similar report could be made to the managers who reported directly to the Vice President of Bus Maintenance and the Vice President of Train Maintenance.

## Results

***Trend Identification*** There were buses with repeat road calls for each of the four systems during the research period. These four systems were air conditioning, brakes, transmission and engine. The air conditioning system had the highest percentage of buses with repeating road calls (37%), followed by the engine with 19%, the transmission with 11%, and the brake system with 5% (see Table 1).

Table 1 Summary of Repeating Road Calls by System and Bus Manufacturer

| | FLXIBLE | NEOPLAN | RTS | % ALL BUSES |
|---|---|---|---|---|
| **Air Conditioning** | 89% | 34% | 19% | 37% |
| **Brakes** | 7% | 3% | 0% | 5% |
| **Transmission** | 15% | 15% | 0% | 11% |
| **Engine** | 37% | 23% | 3% | 19% |

In each system, Flxibles always had the highest frequency of repeating road calls, followed by Neoplans and then RTS buses. The number of times a bus returned to the shop for a repeating problem in a particular system ranged from two to twenty-one. The average bus returned between two and five times. Buses with repeating air conditioning problems returned to the shop most often. Buses with repeating transmission problems returned a maximum of six times. Buses with repeating engine and brake problems returned a maximum of five times for each of these system problems.

***Causes of Trends that may be Addressed by Training*** After reviewing the information regarding the number and types of repeating road calls by system, it was determined that the root causes of repeat, air conditioning road calls could be partially addressed by training. The Training Manager decided not to investigate the root causes of the brake, transmission and engine road calls in order to complete the study in a reasonable period of time. Since the majority of repeat road calls were in the air conditioning system, this system was also selected for further study because reductions in this system's parts and labor costs would have the greatest impact on the organization.

The predominate root cause of the air conditioning road calls was determined to be a build up of non-condensable gases. Analysis of the road call data and information gathered from interviews revealed this build up was partially a result of poor equipment, and partially a result of incomplete repair diagnosis and improper equipment use by mechanics. In addition, some of the air conditioning road calls may have been due to the age and poor quality of the system in the Flxible buses. Faulty parts were ruled out as causes of the repeat road calls. An explanation of these findings follows.

*Analysis of the road call data.* The road call data shows that the majority of air conditioning repairs involved replacement of condensers, compressors, compressor belts, and clutches. These findings were consistent in all three, bus types and most apparent in the Neoplan buses. Most striking about all of these replacements is that many of the same parts were replaced in the same bus within a few weeks or months. Some of the compressors, condensers and compressor belts were replaced up to four times in a single bus during the seven-month research period.

*Informational Interviews.* Interviews with quality control personnel revealed that the frequent replacement of compressors, clutches and condensers was due to the build up of non-condensable gases, primarily nitrogen. The build up of gases created high pressure in the air conditioning system and resulted in the premature wear of condensers, compressors and clutches. This was discovered by one quality control expert whose main function is to inspect parts that are replaced before their warrantee expires and inform the manufacturer of the situation. The manufacturer then provides the reason for the premature failure of the part. The frequent parts replacements indicated the mechanics were fixing the symptom (part failure), but not the root cause (build up of non-condensable gases) of the air conditioning road calls. Interviews with mechanics also revealed that they did not routinely review past repair records when repairing each bus.

The informational interviews revealed additional causes of frequent parts replacement. First, when the clutches were inspected, it was discovered that mechanics did not match the clutch key with the right brand of clutch, and then installed the key improperly. This caused the clutches to burn up from friction and wear out prematurely. Second, it was discovered that the machines that remove non-condensable gases from the air conditioning system were not operating properly and that mechanics were not operating them as long as required by the operating manuals. New machines were purchased during the study period.

*Age and poor quality of system in Flxible buses.* The age and type of air conditioning systems in the Flxible buses may have also contributed to the high number of repeat repairs. The Flxible buses were fifteen years old. The average life span of a bus is twelve years. As a bus ages, repairs become more frequent. Repairs for all systems in the Flxible buses are more frequent then for the other two bus types. In addition, the air conditioning system in the Flxible buses is a "split system." The buses originally came with an air conditioning system that consisted of two separate systems combined into one. In 1991, the two-compressor system was converted to one and all the old components were retained. It is difficult to keep the converted system in balance; this results in premature parts failures. The Flxible buses will be removed from the transit agency's fleet by the end of 1997.

It should be noted, as well, that the air conditioning system in the RTS buses is the most basic of the three systems. The more basic a system, the fewer parts there are to maintain and fail. This is evidenced by the lower repair rates. In addition, the RTS system is compact. The parts are close together which allows a faster cooling response by the system. The air conditioning system in the Neoplan buses is slightly more complicated than the RTS system. Some parts have dual lines that allow for more parts to break. There is, however, nothing endemically wrong with the systems in the RTS and Neoplan buses.

*Faulty parts ruled out.* Faulty parts were considered as a potential cause of the excessive parts replacements, however this hypothesis was ruled out as information came to light about non-condensable gas build up. In addition, the quality control personnel and the manufacturers would have noted if the parts were faulty in their initial reports.

In summary, the issues that can be addressed by training are the mechanics' improper diagnosis of non-condensable gas build up, improper use of machines that remove non-condensable gases, and improper clutch key replacement and installation.

***Identify Training Intervention*** The Training Manager designed a two-hour training program that presented information about these issues and allowed mechanics to practice the skills taught. This course was to be provided to 150 mechanics. Job aids were also created as course materials and would be placed in easily accessible locations in the repair shops. Mechanics will be able to refer to these aids when needed.

***Implement Training Intervention*** The training program was originally planned for delivery in May 1997, before the summer season, when air conditioning breakdowns are most prevalent. The program was not implemented until mid-August 1997, after the researcher's deadline for completion of this paper.

***Evaluate Training Intervention and Report the Financial Impact of the Intervention*** Since the training intervention was not completed before the researcher's deadline, the financial impact of the intervention could not be determined and reported. However, the formula developed for measuring the financial impact is presented below. This formula is based on Phillips' (1991) recommendation that one of the best ways to measure the return on investment of training is by the formula: Savings/Investment.

$$\frac{\text{Savings}}{\text{Investment}} = \frac{\text{A/C Parts Cost Change + A/C Labor Cost Change}}{\text{Research + Training Prep + Materials + Trainer + Mechanics + Evaluation}}$$

*Savings*:

Parts Cost Change: (A/C parts costs in 1997) - (A/C parts cost in 1996)

Labor Cost Change: (A/C labor costs in 1997) - (A/C labor cost in 1996)

*Investment*:

Research: Amount of time spent by the researcher and quality control personnel studying air conditioning problems multiplied by the salaries of these personnel for that time period.

Training Prep: Amount of time spent developing training class and job aids to address training issues multiplied by the salary of the Training Manager for that time period.

Materials: Cost of all materials used during training.

Trainer: The hourly salary of the trainer teaching the classes multiplied by the number of classes taught, multiplied by the length of the class.

Mechanics: The average hourly salary of the mechanics who attend the class, multiplied by the number of mechanics, multiplied by the length of the class.

Evaluation: The average hourly salary of the trainer who performs the evaluation calculations times the amount of time spent performing the evaluation calculations.

**Conclusions and Recommendations**

***Trend Analysis*** Buses at the transit agency experienced repeating road calls in all four bus systems. Listed from greatest to least frequency, these systems were air conditioning (37%), engine (19%), transmission (11%), and brakes (5%). The fact that the number and frequency of air conditioning road calls were by far the highest, indicated that these problems deserved immediate study. The root causes of the repeating road calls in the transmission and engine systems are not clear at this time, but the trends were not as strong as those of the air conditioning system. The costs incurred from brake repairs were largely due to preventive maintenance inspections each time a bus was repaired for any reason. These costs alone are acceptable.

The fact that repeating road calls occurred indicates that the transit agency is spending too much money on parts and labor incurred from road call repairs. Therefore, individuals should be assigned to monitor trends on a monthly basis and proactively identify opportunities for intervention.

***Causes of the Trends That may be Addressed by Training*** It was determined that some of the root causes of repeat air conditioning road calls were due to improper diagnosis of non-condensable gas build up, improper use of machines that remove non-condensable gases, and improper clutch key replacement and installation by mechanics. To address these issues, the training program created by the training manger should be concluded as soon as possible.

Mechanics also did not routinely review repair records, and bring premature part failures to the attention of management. Both these and the three training issues above indicate a need for closer supervision of mechanics. Supervisors need to observe the mechanics as they make repairs and correct them when they see mistakes, ensure mechanics examine past repair records, and encourage and listen to mechanics' suggestions.

In addition, the information in the special training class needs to be incorporated into existing air conditioning training classes. The job aids created need to remain accessible to mechanics. Supervisors also need to ensure the mechanics use both the new techniques taught during the training class and the job aids.

A final note is that one of the quality control personnel stated that the problem with non-condensable gas build up has existed for five years. While he has submitted reports about it in the past, no one has acted on his recommendations. Therefore, it might be beneficial to diagnose the reasons these recommendations went unheeded and implement appropriate remedies. These may include changing procedures or coaching quality control personnel about how to sell their recommendations to management.

***The Evaluation Effort*** The Training Manager did not ensure that his training intervention was implemented in a timely fashion in order to measure the results one year after the study began. The peak time for air conditioning road calls is during the summer months of June through September. Since the training intervention did not begin until mid-August and will not be completed until the end of September, at the earliest, the Training Manager missed his opportunity to evaluate his impact in 1997. This means that if he does measure and report the impact next year, he will be more open to questions about the validity of his results. It will be more likely there are additional variables that contributed to the change in parts and labor costs.

***The Effort to Build the Credibility of the Training Department*** While the Training Manager wanted to improve the credibility of his department, he seemed unaware of the importance of the deadlines he needed to meet. Therefore, further education about the evaluation process might benefit him. When the Training Manager assigned the training intervention to one of his instructors, the instructor mentioned reservations about why the training program might not be appropriate in one of the three repair shops. The Training Manager, who liked to allow his instructors freedom, allowed the instructor to follow up on his reservations and delay the implementation of the training classes. The researcher believes the instructor's reservations may have been politically motivated by his friendship with a quality control specialist in the repair shop that was not involved in the analysis phase of the study. It would have been better for the Training Manager to probe the instructor more about the reasons for his concerns, identify the real cause, and then set a deadline for program implementation if the reservations were valid.

Finally, while effective return on investment results for the training intervention will certainly help the training department's credibility, there are other strategies the Training Manager and Vice President of Training should employ. In order to build the credibility of the training department, they need to build relationships with shop managers and the Vice President of Bus Maintenance, who is the peer of the Vice President of Training. The Vice President of Bus Maintenance is a difficult personality who does not respect the training personnel and shares his beliefs with his direct reports. The Vice President of Bus Maintenance also ignores requests for meetings with the Vice President of Training and the Training Manager and frequently and publicly points out perceived flaws in the training the mechanics receive. The Vice President of Training and Training Manager must develop their conflict resolution skills and find ways to interact more successfully with the Vice President of Bus Maintenance. Without strong relationships with line managers, the training function will always struggle for credibility and influence.

**Contributions to the HRD Field**

This study should have an impact on professional practice in the following ways. First, there are few case studies in the literature about how to build the credibility of a training department. The literature advises you to do so, but does not say how. This methodology of the study serves as a potential model for other Training Managers. Second, the methodology for measuring training effectiveness can be modeled. Third, this study revealed that building the credibility of the training department is based on ability to complete the tasks of planning, evaluating and reporting the impact of a training intervention *as well as* creating and maintaining working relationships with line managers. Relationship issues are generally not discussed in the literature.

**Recommendations for Further Research**

1. Conduct a longitudinal study of this training department and its success and failures as it strives to build credibility (case study).
2. Focus on how to build relationships with line managers as well as the task of reporting the results of training as essential to building the credibility of the training department.

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# Identification, Training, and Certification of Expertise Required of Core Business Processes

*Richard A. Swanson*
*University of Minnesota*

*This case study goes beyond the traditional job and task analysis model into a contemporary business performance improvement model of: Business goal, performance requirement, work process, process-referenced task analysis, expertise training and development, expertise certification, and performance improvement.*

Workplace expertise is the fuel of an organization. Herling (in-press) characterizes human expertise as a complex and multifaceted phenomenon. He defines human expertise as: *Displayed behavior within a specialized domain and/or related domain in the form of consistently demonstrated actions of an individual which are both optimally efficient in their execution and effective in their results.*

Our contemporary communication technology allows us to regularly listen to and view performances by the true experts in many fields of endeavor. We are surrounded by high quality symphonies, lectures, books, movies, sports, and craftsmen. Most of us want and/or expect to be surrounded by high levels of expertise. While the desired state of high expertise can be easily held in the minds' eye, organizations have a continuing struggle in assuring minimal expertise for meeting existing requirements, let alone having expertise to meet future requirements. Meeting and maintaining workforce expertise requirements that are connected to organization goals and core work process requirements are a fundamental challenge to organizations.

***Traditional Job-Task Approach to Expertise*** Organizations have for the most part embraced the job and task oriented approaches to defining workplace expertise and have relied on multiple analysis procedures (Holton, 1995; Swanson, 1996). These approaches are familiar to most human resource management professionals and are driven by federal law in many cases. Essentially they all contain three basic steps:

1. Developing a list of job tasks that may be performed in a job.
2. Verification of the task list as a valid representation of the job.
3. Analysis of precisely what a person needs to know and be able to do to meet a specified performance standard for each task.

Fundamentally, job and task analysis methodologies address the proper unit of analysis: the work task. In practice, the custom is often to use existing job structures, current work practices, and current employees as the frame with which to determine those work task requirements. The outcome is task and expertise analyses that are grounded in the present. In stable environments, this approach works. What happens, however, if jobs, work tasks, and task expertise are not stable but changing rapidly? In today's fast changing world, job responsibilities and requirements change and shift rapidly. New approaches are needed to develop expertise that prepares organization for future changes.

One response has been to change the data collection processes with shorter cycle time so that job analysis is more manageable as jobs change. The assumption here is that traditional thinking and analysis methods are okay, but that they need to be used more aggressively.

At the other end of the thinking, some organizations are taking the position that jobs must be designed to be indeterminate and flexible. As a result, how do you analyze them? There are suggestions in the literature that flexible job models that allow organizations to manage competencies, not jobs, are necessary.

***Competency-Based Approach to Expertise*** Competency assessment is one approach that has been developed to overcome some of the limitations of traditional job analysis (DuBois, 1993). Competencies are generally defined as some underlying characteristic of an employee that enables them to perform the job or task. Because it is an underlying characteristic and one step removed from the tasks themselves, it is a more flexible approach that can be used to select and develop employees across multiple jobs.

Competency models generally proceed in the same fundamental steps as the job analysis model, the only difference being that work tasks are analyzed for underlying competencies as opposed to knowledge, skills and abilities. In some cases, steps one and two are skipped and

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experts are used to develop the competencies directly. This is particularly the case in occupational analysis.

The key point is that competency models are also job-based and therefore operate under the same assumptions outlined above and are subject to the same criticisms that job-based methods are. To the extent that competencies are more likely to be stable than job tasks, they are an improvement, but they still fall short for all situations and particularly in the realm of defining the specific expertise (not general competencies) required to perform.

***Strategic Approach to Expertise*** What is needed is a new system for identifying expertise for work outputs that:

1. is anchored in more stable components of the organization
2. is flexible as it relates to job structures
3. separates work expertise and individuals from job structures
4. addresses organizational, process and individual levels of performance can be used strategically, not reactively

This strategic management of expertise is fundamentally different than traditional processes because it addresses the objectives listed above. In this model, organizations manage strategic goals, core processes, and core competencies and expertise. Job structures emerge as a final step in the process, but have no real role in the planning. That is, jobs can be reorganized without affecting the expertise planning. Jobs are expected to change frequently as expertise is re-deployed to achieve strategic goals. Employee development systems are focused on expertise, not jobs. *It is an integrated planning process that links expertise to core business processes which are linked to customer needs.*

**The Healthcare Inc. Case**

Healthcare Inc. is facing a serious business problem. Even though the company sales-force is made up of some extraordinary capable people, the largest accounts are increasingly being captured by the competition. Sales are down, and in response the company is changing the sales process and the way people will do their jobs. Analysis has revealed the need to revise the core sales process. Doing this will put the people working in the nine job roles, which contribute to the completion of a sales transaction into a new working relationship. Furthermore, the best people now working in sales do not like the pending changes and are considering leaving.

This actual case is fairly common in contemporary organizations. And, for management the question is – How can an organization maintain and develop the organization's core workforce expertise in the middle of change?

The case study reported here is of an actual company under the pseudonym of Healthcare Inc., a major health care insurance company and provider in the United States. The Healthcare Inc. business goal was focused on increasing sales in a changing and competitive environment. In this case, the sales process was a core work process needing revision and realignment in relation to the business goal and the workforce expertise. This case clearly illustrates the need for new approaches to analyzing and building workplace expertise in fast changing competitive environments.

***Diagnose the Performance*** The need for this total effort was fully clarified in a thorough a performance improvement proposal based on a rigorous analysis method. The general steps of this performance diagnosis process included: (1) Articulate initial purpose, (2) Assess performance variable, (3) Specify performance measures, (4) Determine performance needs, (5) Construct improvement proposal (Swanson, 1996 p. 45).

A summary of the up-front analysis data was reported back to senior management through the cells created by the performance diagnosis matrix of enabling questions used in this diagnosis phase. The data from these cells in context of the strategic business goals of Healthcare Inc. were used as a basis for uncovering existing system sales performance problems and solutions. A major conclusion was that the existing sales process was incapable of meeting the strategic business goals of timeliness and quality features necessary to retain market share. Thus, the sales process needed to be significantly improved, the roles in the process needed to be clarified, and the expertise required to expertly carry out the roles within the process needed to be in place.

***Document the Existing Process*** The existing sales process was documented and found to be a 79 step process spread over nine job categories. The resulting integrated flowchart– an integration of the steps within the process and the people that work in the process– brings the

process and the people working in the process to the fore. As you can see in Figure 1, each step from the integrated flowchart is coded against all those job roles directly involved in that step. For example, there are three job roles engaged in step 31. Of those, the new business manager (NBM) is primarily responsible for the oversight of this step with input from CM and Pro. The bold "X" against the NBM role for step 31 indicates responsibility. A separate time-sensitive longitudinal flowchart of each of the 79 steps is also produced.

Figure . The Record of sales ProcessSteps (page 4 of 10)

| | IMPLEMENTATION & ACCOUNT MANAGEMENT SUB-PROCESS: | Mgmt | NBM | PSS | CM | BSC/ Serv | Pro | UW | IM/ IS | C |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| #25 | Assign Service Representative to case OR | X | X | | X | X | | | | |
| #26 | Request Case Mgr. from BSC for the case. | X | | | | X | | | | |
| #27 | Are Customer's expectations in sync w/ _____ capability to deliver product, price & service? (If no, go to #15 & #16) | | | | X | X | X | X | | X |
| A | Process Measure: # of times _____ capability is not in sync w/ Customer's requirements of cost, product or service; check possible areas: Underwriting, Sales, Producers, Customer, as well as magnitude of difference. | X | | | | | | | | |
| #28 | If yes, review pre-sale file, proposal, and Underwriting rates. | | X | X | X | | | | | |
| #29 | Confirm internally what products were sold. | | X | X | X | X | | X | X | |
| #30+ | Advise Customer of network developments and/or introduce any new service delivery. | | X | | X | | X | | | |
| #31 | Notify implementation team of sale and engage. | | X | | X | | | | X | |
| * #32 | Conduct implementation meeting. (Comment: *For mgmt. training, stress major role of NBM; exceptions will occur depending on whether CM has been introduced or not; This is situational.*) | | X | | X | X | X | | X | X |
| | #32.1 Answer benefits questions. | | | | X | X | | | X | |
| | #32.2 Answer questions on administrative process. | | | | X | X | | | X | |
| #33 | Send letter to Customer following up on implementation issues. | | | | X | X | | | X | |
| * #34+ | Deliver and negotiate financial contracts. | | | | X | | | | | X |
| #35 | Monitor service process. | X | | X | X | | | | | |

* - Large, multi-step activity
+ - This activity could occur anytime from this point on
A - This step should be automated

Page 4

The core method of documenting the existing process was to (1) telephone interview a select group of sales people, sales managers, and sales support personnel. In this case interviewees came from four regions throughout the United States; (2) create a first draft of the integrated flowchart; (3) visit multiple sales offices and observe sales personnel and sales support personnel carrying out their work (including going on sales calls); (4) create a second draft of the integrated flowchart; (5) send out the sales integrated flowchart to the select group for review, revision, and approval.

***Improved Process*** The integrated flowchart of how the work is presently done is used as a basis for selecting a group of personnel to review and revise. This was done in a face-to-face two day work session. Each participant had the integrated flowchart prior to the meeting and was informed of the process improvement goal. As each step was reviewed, along with the job roles contributing to that step, improvement revisions were entertained, evaluated, and acted upon by the group. In this case, the 79 step process was reduced to 52 steps and all nine job categories contributing to the existing process continued to contribute to the revised process in a modified manner. In addition, the 52 steps were clustered into sub-processes or phases: (1) Pre-sale (24 steps); Implementation and account management (25 steps); Sales renewals (18 steps); and Settlement (12 steps). Following the 2-day work session, the revised integrated flowchart was sent to a discrete list of Healthcare Inc. decision makers for their final approval.

***Specify Process-Referenced Tasks*** This phase and the next two phases were completed in one 2-day work session. This phase involved the earlier team of Healthcare Inc. experts -- the select group of sales people, sales managers, and sales support personnel-- along with the professional trainers that had up to then been responsible for developing sales expertise in sales personnel and who would be partially responsible for the new Healthcare Inc. sales personnel development system.



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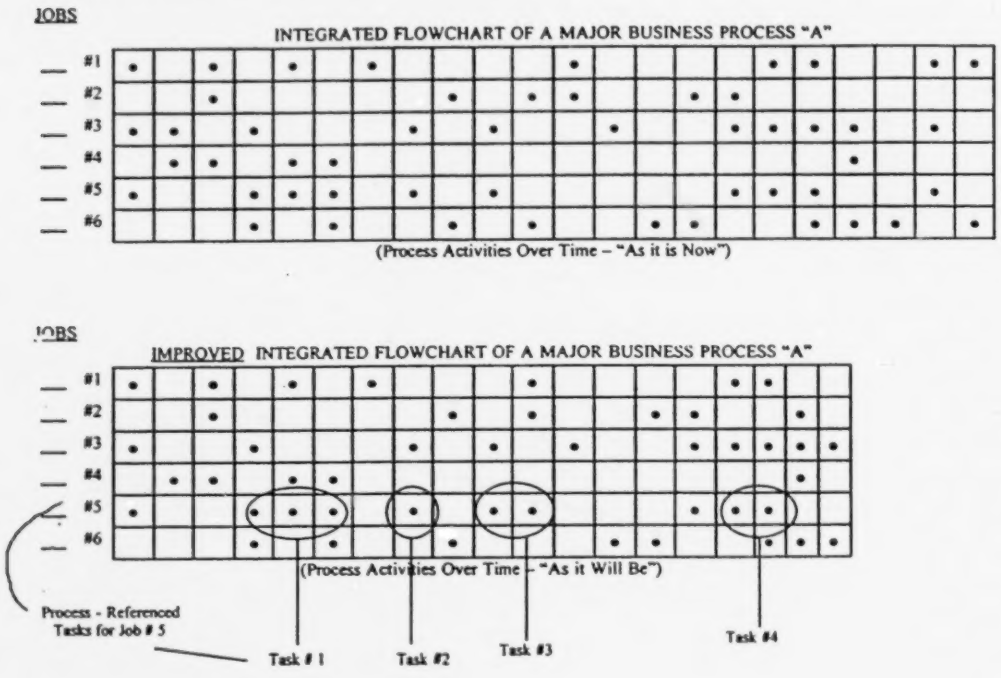
Given the improved sales process, the team clustered 52 sales process steps into tasks attributable to one or more of the nine job roles in the sales process. In some instances a single step was equivalent to a task, and in most instances several highly related steps were clustered into a process-referenced task. When this occurred, a task name was given the grouping of steps. Figure 2 graphically characterizes this process. This phase is relatively easy to do and, yet, is it fundamental in connecting of work tasks to core work process(es)-- something regularly missing in organizations and a source of major performance "disconnects" in organizations.

**Figure 2. PROCESS-REFERENCED TASKS**
**"Identifying job tasks within major business processes."**




***Establish Process-Referenced Task Standards (performance, expertise, knowledge)*** While the preceding phase is relatively simple, this phase is quite taxing. Task standards for each task, in the forms of performance "measure and standard," (2) the "must know" knowledge, and (3) the "must do" expertise are established. In doing this work, the following data sheet is used to record decisions (Figure 3).

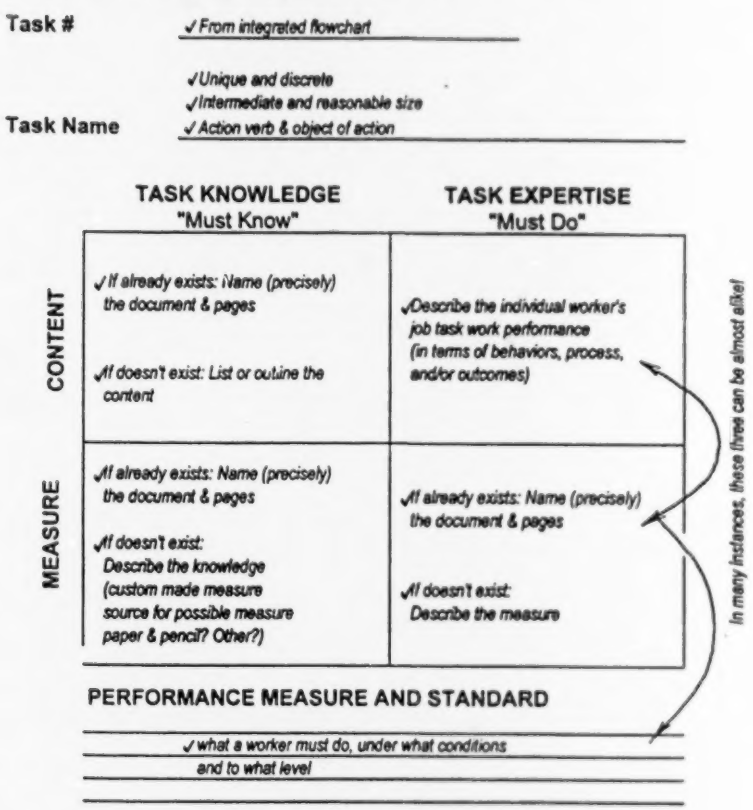
One critical time-saving aspect to this effort is to identify *existing* documentation and sources of knowledge, expertise, and measurement. In fact, participants in this process were asked to bring along all readily available relevant documentation to the process-referenced tasks under consideration for review and consideration during the work session. In fact, so many good ideas were coming out so fast from the group it was critical to have an official recorder of information in order that no information was lost.

This highly charged session at Healthcare Inc. yielded critical basic information in the realms of performance standards, basic knowledge, and unexpected sources of expertise and related training materials. One example was to discover that two particular sales personnel produced exceptional proposals and the team requested copies from them to use as core training aides.

***Produce Task Training and Certification Modules*** Following *the establishment of process-referenced task standards*, the Healthcare Inc.'s training professionals put together field-based learning modules for those working in the sales process. The learning objectives, field

learning guides, and support materials were produced to develop the required knowledge and expertise sales process-referenced tasks.

**Figure 3. PROCESS REFERENCED TASK STANDARDS**
"Performance, Knowledge, and Expertise Data"


Task #
✓From integrated flowchart
✓Unique and discrete
✓Intermediate and reasonable size
Task Name
✓Action verb & object of action
TASK KNOWLEDGE
"Must Know"
TASK EXPERTISE
"Must Do"
CONTENT
✓If already exists: Name (precisely) the document & pages
✓If doesn't exist: List or outline the content
✓Describe the individual worker's job task work performance (in terms of behaviors, process, and/or outcomes)
MEASURE
✓If already exists: Name (precisely) the document & pages
✓If doesn't exist: Describe the knowledge (custom made measure source for possible measure paper & pencil? Other?)
✓If already exists: Name (precisely) the document & pages
✓If doesn't exist: Describe the measure
In many instances, these three can be almost alike!
PERFORMANCE MEASURE AND STANDARD
✓what a worker must do, under what conditions and to what level

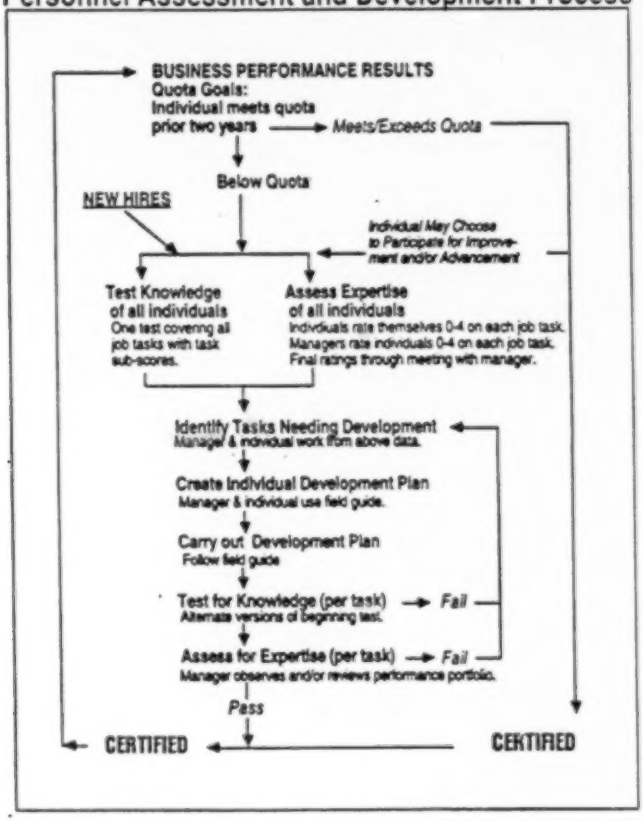
In addition, tests were developed and administered to certify knowledge and expertise on a task-by-task basis. Individuals working in the improved Healthcare Inc. sales process were required to be certified in each processed-referenced task within their job. To this end, the personnel assessment and development process is illustrated in Figure 4.

***Summary of the Healthcare Inc. Case*** The strategic management of expertise at Healthcare Inc. proved to be efficient and effective. A significant portion of the activity was on uncharted territory for the company and the company consultants. While the individual elements appeared rational and at times routine, the overall perspective of directly connecting business goals and the expertise of individuals was radical. In addition, the timeline of eight months to accomplish this with credibility was almost revolutionary.

**Managing the Development of Expertise**

One primary goal of management is to develop and maintain workforce expertise that is systematically connected to business goals and the process(es) by which the work is carried out. Even if the world stood relatively still-- such that work methods and normal employee turnover were evolutionary, not revolutionary-- this would be a challenging task.

Figure 4.
Personnel Assessment and Development Process




A naive assumption would be that most of the human expertise required to understand and fulfill performance requirements already exists in the organization and that the job of management is to simply to patch it up as necessary.

This system points to a fundamentally different approach to developing employees. Employee development is focused on employees building a portfolio of expertise linked to core processes. A strategic expertise map allows organizations to manage expertise rather than jobs. Employee development systems become future-oriented and closely linked to core business processes and critical strategic goals. Employees can manage their careers based on expertise, rather than jobs. Jobs become temporary holding places that can and will change frequently.

The work of developing and maintaining workforce expertise is not so simple. The two primary *selection strategies* available to management are : (1) to select individuals based on *having the required expertise* or (2) select individuals *based on their capacity to develop the required expertise*. In addition, there are two primary *development strategies* available to management: (1) the *organization determines* the required workplace expertise and development method or (2) *individual workers determine* the required expertise and development method. Figure 5 illustrates this matrix.

The first selection strategy is that of candidates already having the required expertise. The problem here is that much of the *required expertise* to be a true expert in an organization is organization-specific. To the point that it is generic professional or industry-wide expertise, it can likely be hired in the marketplace. Organization-specific expertise can only be developed in or through the organization. For example, many management skills are generic and can be acquired



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in the marketplace. However, a manufacturing manager is unlikely to have the expertise needed to oversee proprietary processes.

| | | Selection Strategies: Candidates already have expertise required | Selection Strategies: Candidates have capacity to develop expertise required |
|---|---|---|---|
| Development Strategies | Organization determines the required expertise & development method | 1 | 2 |
| | Individuals determine the required expertise & development method | 3 | 4 |

**Figure 5: Strategies for Obtaining Expertise**

The second selection strategy is that of candidates having the *capacity to develop* the required expertise. This perspective informs us that adults have a capacity that directs and limits their growth. This capacity should not be thought of as being organization or industry-specific. Rather, it is content and context specific. For example, a person's mathematical aptitude (content) will limit their ability to handle complex financial equations. And, a person's social style (context) will limit the interactive arenas in which they will be effective. Many organizations today are finding that their employees lack the basic skills to adapt to unskilled jobs. One hospital changing to an computerized system for patient services found that fully half of their employees could not operate the system because they could not read what was on the computer screen. At higher levels, some traditional managers accustomed to a "command and control" approach to managing people have not had the capacity to adapt to newer team-oriented organizations.

The first development strategy is that of the organization determining the required expertise and the appropriate development strategy. Nuclear plant operator and airline pilot training are two examples of this approach. In these cases, organizations must carefully control the expertise development process to insure safety where death and destruction are the direct result of lack of expertise.

The second development strategy, that of the individual determining the appropriate expertise needed and development strategy, is quite typical of professional roles, especially highly specialized ones. It is probably quite appropriate that professions such as field biologists or certified public accountants determine their expertise development. Increasingly though, organizations are involving front-line workers in determining development strategies, particularly in organizations adopting quality management or learning organization strategies.

What is the best approach? Each of these cells provide advantages and disadvantages. A caution would be to not find yourself locked into one cell or one view. Staying locked into a cell 1 strategy of hiring all the required expertise and having the organization control the expertise determination and development process may lead to frequent reengineering and layoffs as expertise requirements shift. Equally dangerous is using only a cell 3 strategy whereby employees are selected for their capacity to develop and then determine expertise development needs themselves. While learning capacity and activity may be high under this approach, the organization may find itself lacking in the core expertise required to achieve its strategic goals.

A rational approach might be to embrace all cells when thinking strategically. Such a holistic approach is probably best for organizations in high change environments to entertain in order to be prepared for all scenarios. Developing expertise in the midst of change means organizations must abandon unidimensional approaches and find an appropriate balance between all four cells.

Employees should be *selected* both for the expertise they bring with them, and for their capacity to develop new expertise as needs change. Especially in high-technology arenas, today's expertise may well be obsolete in a short time. In the midst of change, the *capacity* to develop is just as important as current expertise. At Healthcare, Inc., sales employees were afraid of the change, in part because their capacity to develop was not adequately considered when they were selected. When their expertise became outdated, they struggled to change.

Similarly, organizations should be partners with the individual to determine future expertise and development needed. The organization clearly has the most strategic view and needs to be sure that development will lead to business performance in the future. On the other hand, the individual employee is often the first to realize that changes are occurring in the marketplace that will require new expertise. In many instances, employees recognize the need for new business practices and innovations before management. Healthcare, Inc. could have benefited from a stronger partnership with employees to recognize the need to re-engineer sales processes to meet growing competition. As it was, the changes only occurred when competitive pressure reached crisis levels.

## Conclusion

The contemporary management literature speaks powerfully about the struggle organizations are having in connecting their leadership roles and organizational systems to intellectual capital and workplace expertise of individual contributors. Two examples range from: the Jacobs and Jones book , *Structured On-The-Job Training: Unleashing Employee Expertise in the Workplace* (1995), that informs us of how to utilize expert employees to develop similar expertise in fellow employees, to the Robinson and Stern book, *Corporate Creativity: How Innovation and Improvement Actually Happens* (1997), that provides six essential elements necessarily for employees to do something new and potentially useful without being directly shown or taught.

This case study of conducted in a large multi-national healthcare corporation supports two core ideas. First, it demonstrates a field test of strategic human resource development theory of connecting business strategy and the development of expertise in individual employees (see Torraco & Swanson, 1995). Second, it puts forward the idea of process-referenced expertise and demonstrates its utility in a field setting.

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Richard A. Swanson, Professor of Human Resource Development, University of Minnesota, St. Paul, Minnesota, and senior partner of Swanson & Associates, Inc. Phone/Fax 612-292-0448

# Large-Scale Performance-Driven Training Needs Assessment: A Case Study

*Elwood F. Holton III*
*Reid A. Bates*
*Sharon S. Naquin*
*Louisiana State University*

*This paper reports a case study of an unusual needs assessment project designed to identify the performance improvement training needs of Louisiana state government employees. The project required the development of a hybrid methodology, called large-scale performance–driven training needs assessment, that was more performance oriented than felt needs in large scale applications. The project also highlights deficiencies in needs assessment methodologies that suggest avenues for research.*

Louisiana state employees are emerging from a long period during which little funding was available for employee training. This was due to a variety of political and economic factors that have left state employees with a high level of unmet training needs. The current administration has a high priority goal to improve employee training and approached the HRD program at Louisiana State University for assistance in assessing and prioritizing training needs.

The scope of this project presented an unusual set of requirements. The clients needed an assessment that could be used on a large scale and would be linked to performance. Specifically, the LSU HRD program was asked to develop a methodology that met the following criteria:

- could be used with *all* state departments (72,000 employees),
- was linked to performance,
- gave *all* employees opportunity for input,
- could assess needs throughout all of state government in 1 year, and
- could be taught and utilized by state employees after the project.

The purpose of this paper is to report on the methodology developed and the pilot implementation of that methodology. While this situation may seem like a very unique one, the need for performance focused training needs assessment on a large scale may not be. With the current shift in emphasis from training to performance, many organizations with traditional course delivery HRD departments may have a need for a large scale assessment methodology to initiate a performance driven training strategy. The needs assessment literature does not report such methodologies. The methodology and experiences of this case should be useful to other organizations as a way to accelerate their move to performance driven human resource development or working toward a culture in which assessment is more accepted.

## Methodology Design

Traditionally, "felt needs" methodologies, which ask employees to simply list or rank desired training courses, have been used to assess needs of large number of employees quickly and to include as many employees as possible. Unfortunately, this approach usually has only minimal success in improving performance. While it can be effective at boosting morale, it is difficult to link such strategies to job outcomes. Effective performance linked needs assessments result from multi-level, multi-dimensional strategies (Holton, 1995).

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Performance analysis, on the other hand, is quite effective at identifying training and non-training interventions that will improve job performance (Swanson, 1994). Unfortunately, these methodologies generally require analysts to work with subject matter experts in each domain, thus making them ill-suited for large-scale application unless enormous resources are available. Traditional training needs assessment methodologies such as job analysis, task analysis or person analysis (Goldstein, 1993, Moore & Dutton, 1978, Sleezer, 1991) are similarly ill suited. Generally, performance analysis is regarded as the most preferred methodology, but was impractical for this project. The state simply did not have the resources or the time to conduct intensive performance analysis for all state offices.

This dilemma is illustrated in Figure 1. The challenge was to devise a methodology that would capture the best of both approaches -- that is, a methodology that could be implemented on a large scale, would include many employees, and would have a high likelihood of improving performance in a meaningful way. While the shift to performance oriented assessment processes is appropriate, there are no methodologies available to conduct training needs assessment on such a large scale as mandated here, *and* target organizational performance improvement as a goal

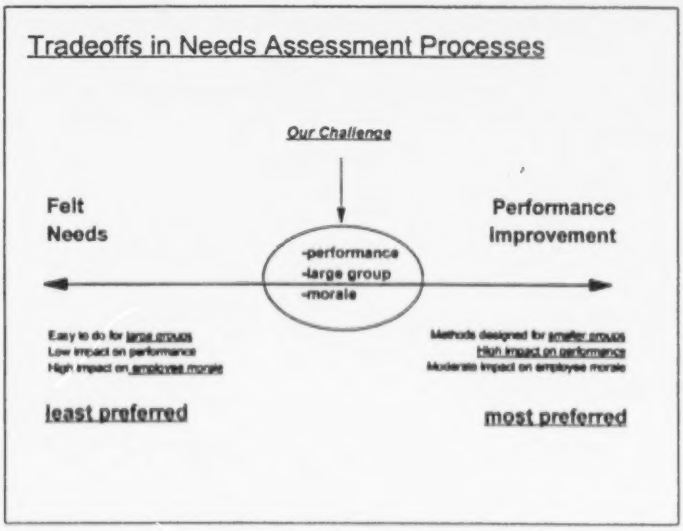


Figure 1

**Large Scale Performance-Driven Training Needs Assessment Methodology**

The methodology developed for this project was called large-scale performance-driven training needs assessment: an overview is shown in Figure 2. This methodology followed the discrepancy model of needs assessment: that is, our primary goal was to identify what is and what should be in terms of valued organizational goals or results and prioritize those gaps (Kaufman, 1987). Consequently, the process consisted of two phases; strategic needs assessment and employee perceived performance improvement through training. Phase 1, the strategic needs assessment, was a top-down approach whereby key organizational goals were identified and analyzed in depth to determine appropriate training interventions to support goal accomplishment. For high priority strategic goals, the most advanced performance analysis feasible was conducted, frequently using multiple data collection strategies.

Phase 2, the employee perceived performance improvement opportunities phase, was a bottom-up strategy designed to involve all employees and to identify key "maintenance" type training needs. Emphasis was placed on maximum employee input and also on training needed to improve performance as opposed to training employees would simply like to have.

The assessment outcomes from Phase 1 and 2 were prioritized training recommendations that were performance driven in the sense they were either tied to key organizational goals or addressed an employee perceived opportunity for performance improvement through training.

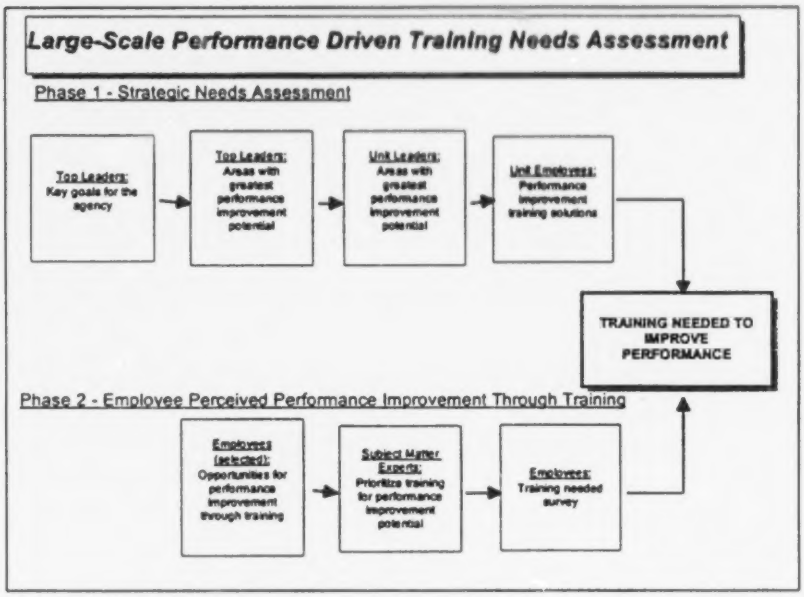
Large-Scale Performance Driven Training Needs Assessment
Phase 1 - Strategic Needs Assessment
Top Leaders: Key goals for the agency
Top Leaders: Areas with greatest performance improvement potential
Unit Leaders: Areas with greatest performance improvement potential
Unit Employees: Performance improvement training solutions
TRAINING NEEDED TO IMPROVE PERFORMANCE
Phase 2 - Employee Perceived Performance Improvement Through Training
Employees (selected): Opportunities for performance improvement through training
Subject Matter Experts: Prioritize training for performance improvement potential
Employees: Training needed survey

Figure 2

***Phase 1 – Strategic Performance Improvement Process*** The first phase of the process was designed to identify and focus on the most important strategic goals for the organization and to employ sophisticated analysis methods to analyze them (see figure 3). The key steps were as follows:

1. Top management in the organization were interviewed to a) identify high priority performance goals, b) performance indicators and c) to identify perceived barriers to accomplishing them.
2. Goals and expected outcomes were summarized in a report for the organization head.
3. Organization head rated each strategic objective as high, medium or low priority. Medium and Low priority goals were not assessed.
4. Unit management and selected employees were interviewed to gain a better understanding of the problem.
5. Full performance analysis methodologies appropriate for the situation were implemented where appropriate. These typically involved multiple data collection methods and were quite intensive.
6. Training recommendations were made.

This top-down approach resulted in top leaders' articulation of key goals and objectives and was a critical step in limiting the range of activities for which input from employees would be solicited. Thus, felt needs and desired training courses could be discounted relatively early in the needs assessment process. The project team could easily distinguish training needs that were compatible with both the organizational goals and potential performance improvement areas from areas that employees simply wanted additional training (i.e., Internet usage, etc.).

***Phase 2 – Employee Perceived Strategic Performance Improvement Through Training***

Because phase 2 had to be designed to assess a large number of employees, the survey method was the only logical choice. The key design decision was how to make an employee survey more valid than a felt-needs survey. Conceptually, the project team attempted to replicate

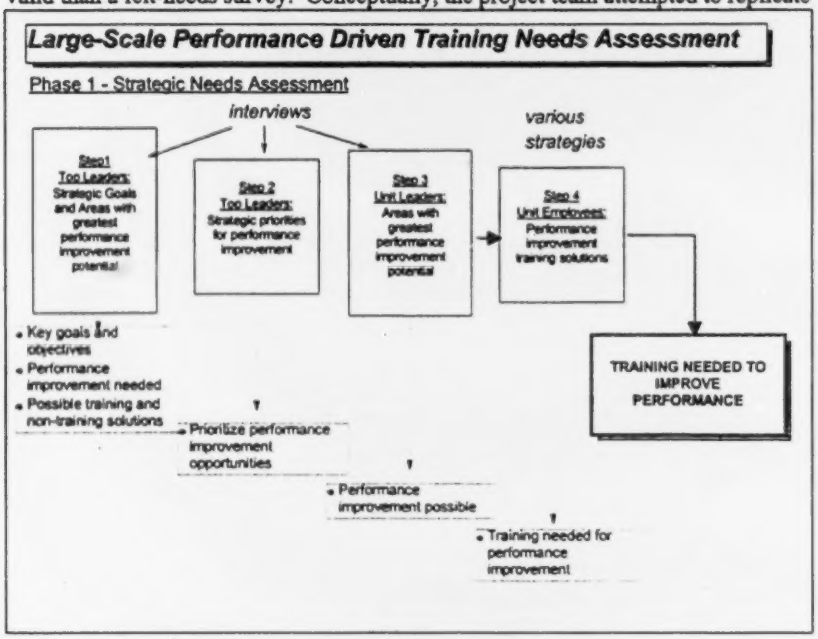
Large-Scale Performance Driven Training Needs Assessment
Phase 1 - Strategic Needs Assessment
interviews
various strategies
Step1 Top Leaders: Strategic Goals and Areas with greatest performance improvement potential
Step 2 Top Leaders: Strategic priorities for performance improvement
Step 3 Unit Leaders: Areas with greatest performance improvement potential
Step 4 Unit Employees: Performance improvement training solutions
• Key goals and objectives
• Performance improvement needed
• Possible training and non-training solutions
• Prioritize performance improvement opportunities
• Performance improvement possible
• Training needed for performance improvement
TRAINING NEEDED TO IMPROVE PERFORMANCE

Figure 3

the process that might be used if able to conduct focus groups with each group of employees to identify possible performance problems and then survey the entire employee population (see figure 4). Here are the key steps:

1. Employees were divided into job groups with somewhat similar tasks (approximately 20 per department).
2. For each employee group, a sample of approximately 20% was randomly drawn and sent a pre-survey form. The instructions on this form were the first key to focusing the employee perception data on performance. They were first instructed to:

   *Please describe below the three to five biggest problems you face in your job that keep you from being as productive as you think you could be. Using the boxes provided, rank the problems that you have identified in order of importance.*

   Then, they were asked (in separate columns on the form):

   *-For each problem noted, please identify any possible training solutions you see.*
   *-For each problem noted, please identify any possible solutions other than training you see.*

3. Three to six subject matter experts from that employee group were then chosen to review the results of the pre-survey. This step was crucial to making sure that employees had not identified low priority issues or overlooked other important items. SMEs reviewed both the performance problems and the proposed solutions.
4. A survey was created using the proposed training solutions (this was a training needs assessment) and distributed to all employees in the group. The instructions on this form were



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the second key to focusing the employee perception data on performance. Employees were instructed to:

*For each training topic, please indicate the extent to which your performance would improve if you completed this training (5-point Likert response, "none" to "a great deal").*

5. Responses were tabulated and ranked by perceived performance improvement rating.

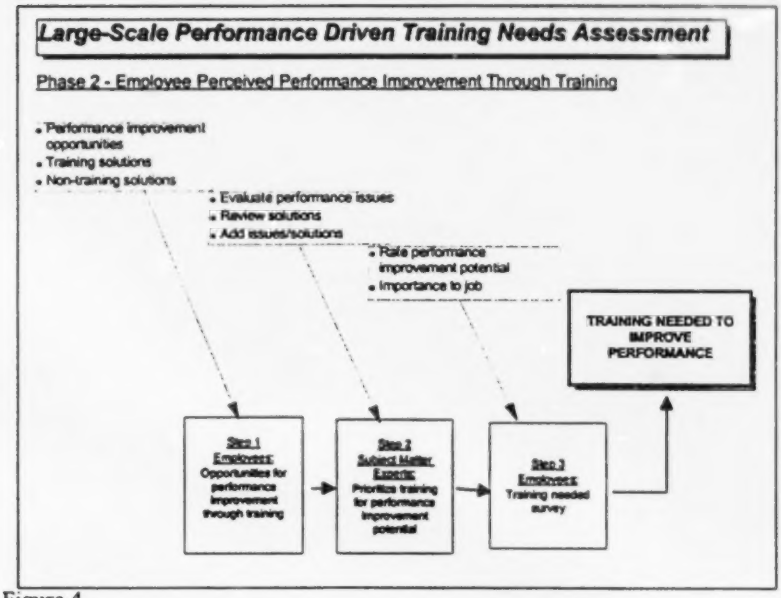
Large-Scale Performance Driven Training Needs Assessment
Phase 2 - Employee Perceived Performance Improvement Through Training
• Performance improvement opportunities
• Training solutions
• Non-training solutions
• Evaluate performance issues
• Review solutions
• Add issues/solutions
• Rate performance improvement potential
• Importance to job
TRAINING NEEDED TO IMPROVE PERFORMANCE
Step 1 Employees: Opportunities for performance improvement through training
Step 2 Subject Matter Experts: Prioritize training for performance improvement potential
Step 3 Employees: Training needed survey

Figure 4

**Testing the Methodology**

This methodology was implemented in two state departments over five months and involved approximately 2,000 employees. Although there was no way to objectively measure its success, there are indicators that it was successful. These include:

1. The process was completed on time and within resource limitations.
2. Phase 1 led to a small set of very high priority organizational goals. Intensive assessment in these areas led to significant training and non-training initiatives, most of which are currently being implemented .
3. There are several indicators that Phase 2 yielded training needs more likely to impact performance:
   - Employees reported many performance problems with no training solutions, suggesting that they were able to use the pre-survey properly. They also reported many non-training solutions to problems, as well as training solutions.
   - The surveys sent to all employees were usually short, containing sets of well-defined training initiatives that tended to focus on specific performance issues, rather than cafeteria style lists of possible training topics.
   - The results from the final survey pointed to an even smaller set of training needs judged by employees to have high likelihood of improving their performance. In fact, this was one problem because managers were accustomed to seeing longer lists of needs.


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**Discussion – Lessons Learned**

At one level, many of the lessons learned form this project are those that are learned from many quality needs assessment projects (Holton, 1995). Examples include using multiple data collection methods, assessing at multiple organizational levels, the importance of getting buy-in, and getting multiple perspectives on problems. These are not unique to large-scale needs assessment, so they will not be discussed in any detail. Our focus is on lessons learned that are more unique to large-scale applications such as this.

Most of the lessons learned from this project relate to characteristics typical of organizations that have not emphasized training or other forms of human resource development for *such* a long period of time. The same organizational characteristics that created the need for this special approach to needs assessment also created dynamics that made it even more difficult to implement.

***Identifying Strategic Goals Was Not Easy*** Because of budget restrictions, low staffing levels, and other operational barriers. many top and mid-level managers had become accustomed to operating in day-to-day survival mode without conscious thought of future goals and objectives. In other words, these managers were forced to concentrate more of their efforts on meeting the immediate work requirements rather than on forecasting, projecting, and envisioning goals for the future. In other instances, it was evident that top managers had never shared their goals with middle managers. Thus, the goals and objectives expressed by the two groups were sometimes contradictory or incompatible. Both situations forced the project team to deviate from the pre-determined interview questions and "dig deeper" in their efforts to identify strategic goals. Thus, strong facilitation skills were required in this phase of the methodology. This problem was exacerbated by the fact this was a government organization. Many government agencies are not oriented toward strategic thinking, but rather focus mostly on day-to-day operations and service.

***Needs Assessment Was Also a Culture Change Process*** The team failed to fully recognize that the conditions that created the need for large-scale needs assessment also meant that the culture was ill-prepared to support performance oriented needs assessment. It is now obvious that the methodology developed and implemented in this project assumes that the culture of the client organization is conducive to needs assessment processes.

We have modified our approach to integrate organizational change models in our process. For this organization, training needs assessment, particularly of a performance oriented type, was a significant enough culture change that attention had to be given to the change implications. In fact, in many instances the technical nature of the needs assessment was less important than the dynamics of the change process.

Cummings and Worley (1997) suggest five stages of managing the change process:

1. Motivating change
2. Creating a vision
3. Developing political support
4. Managing the transition
5. Sustaining momentum

In organizations changing to performance oriented needs assessment, or renewing a commitment to training, equal attention must be given to these five stages. We have reached a point of essentially operating with dual models—these five stages and the needs assessment models—running parallel in our heads. Needs assessment activities are planned and evaluated using both models, rather than just one.

***Training the Client*** We also discovered that inexperienced clients, such as we had in this organization, were often unable to clearly articulate their goals for the needs assessment. Even though we reached what we thought were clear understandings, when the results were reported, some clients were disappointed that their expectations were not met. After several extensive meetings with the clients, a consensus was reached that what was really needed was client education prior to the needs assessment so they could ask us the right questions.

In phase 2 of this project (ongoing now) we have implemented a combined training/planning process that teaches clients the potential of needs assessment and leads them through a planning process. The planning process helps them develop clearer goals and helps the needs assessors and clients to reach a clearer consensus.

***Selling the Process To Employees*** Because no such task had ever been attempted among Louisiana state employees, and because such a long period had lapsed (under the previous administration) during which few training needs were addressed, employees were understandably skeptical about the process, doubting that their input will be valued or even used. Thus, employees needed reassurance from both the project team and upper management that information obtained from employees would be used to address organizational needs. Statements of commitment from the Governor, department Secretaries, Under Secretaries, department managers, etc. were necessary to ensure that employee feedback would be highly regarded.

In summary, it is quite likely that any organization requiring a large-scale needs assessment such as was implemented here will also share some of these other characteristics. It is vitally important that assessors realize that they are not just engaging in needs assessment, but organizational change as well. If assessors view the situation only through a training needs assessment lens, they will miss critical, powerful organizational dynamics that will hurt their results.

## Implications for Research

This case is an excellent lesson in how practice can influence theory and research. There are several core implications for needs assessment research.

***Need for More Hybrid Methodologies*** There is little question that other analysis methodologies could have resulted in superior answers for any particular employee group. If other performance diagnosis processes could have been employed in all groups, training would be more likely to improve performance. It should be equally clear that these methods are too resource intensive for large-scale adoption. A felt needs/survey approach, although well suited to large scale adoption, is largely ineffective at identifying training or other interventions tied to organizational performance goals. We feel strongly that our approach was far superior to a felt needs approach.

It is possible that researchers have been so focused on developing superior techniques, that they have left practitioners with choosing between these two extremes rather than a continuum of methodologies. Hybrid methodologies, such as the one described here, enable organizations to make progress on the journey to performance improvement in a practical way. In this specific case, it is likely that more sophisticated methods could be employed once the initial training needs were met. From a research perspective, the danger lies in assuming that organizations and practitioners can make quantum leaps in their level of sophistication. As new techniques are developed, this case highlights that it is important to also provide a continuum of hybrid methodologies that serve as intermediate steps.

***Change Oriented Assessment Models*** Traditional needs assessment models are static, assuming that users can adopt them in whole. That is, they present a methodology without a path for advancing to it. Researchers who are concerned about seeing advanced practices adopted by practitioners should consider providing a clear path for changing from current practices to the more complete model. This might consist of:

- Layers of elements to identify which components to implement first, second, and so forth.
- Specification of critical versus less critical elements to guide practitioners in making judgements on which compromises to make.
- A series of hybrid methodologies that provide a "stair step" approach to implementing the full methodology.

***Organizational Readiness for Assessment*** There is a temptation to view needs assessment as a technical data collection or research process. Though most texts caution assessors

to obtain buy-in and management support, there is still an underlying assumption that the culture and organizational systems are receptive to needs assessment. This case highlights an organization where those assumptions were incorrect. In this instance their culture was not accustomed to assessment in general, as well as performance oriented assessment.

While this case may be a bit extreme, there are likely to be many organizations in which assessment is to some extent foreign to its culture. Researchers need to be more explicit about the assumptions underlying "best practice" methodologies in needs assessment. Then, researchers need to establish guidelines to evaluate an organization's readiness for assessment based on those assumptions.

***Models & Best Practices*** The discrepancy model of needs assessment is one of the most commonly used to identify learning and performance needs in organizations (Kaufman, 1986; Zemke, 1994). It has also served as an important heuristic for diagnosing performance problems in organizations. Needs assessment using the discrepancy model aims to define the gap between a desired 'ideal' state and the current state and to identify and prioritize appropriate interventions to overcome this gap. The discrepancy model was chosen as a foundation for hybrid methodology used in this project based on its presumed ability to meet key project mandates. For example, the functional flexibility of the model made adapting it to a large scale relatively straightforward and made high levels of employee participation possible. Its simplicity also suggested it as a process that could be implemented by individuals with limited needs assessment experience. As a prescriptive needs assessment process, the discrepancy model did not provide for practical alternatives when faced with 1) an organization unable to define strategic goals (i.e., to define the ideal state they wish to attain); 2) employees reluctant to participate in the needs assessment process; or 3) an organizational culture resisting the change implicit in the needs assessment process. In short, our experience supports other criticisms of the discrepancy model indicating that 1) organizational problems are often to complex and ambiguous to be captured by the model and 2) the desired and current states of organizations cannot be easily articulated by the model (Lewis & Bjorkquist, 1992).

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